

FIG. 1

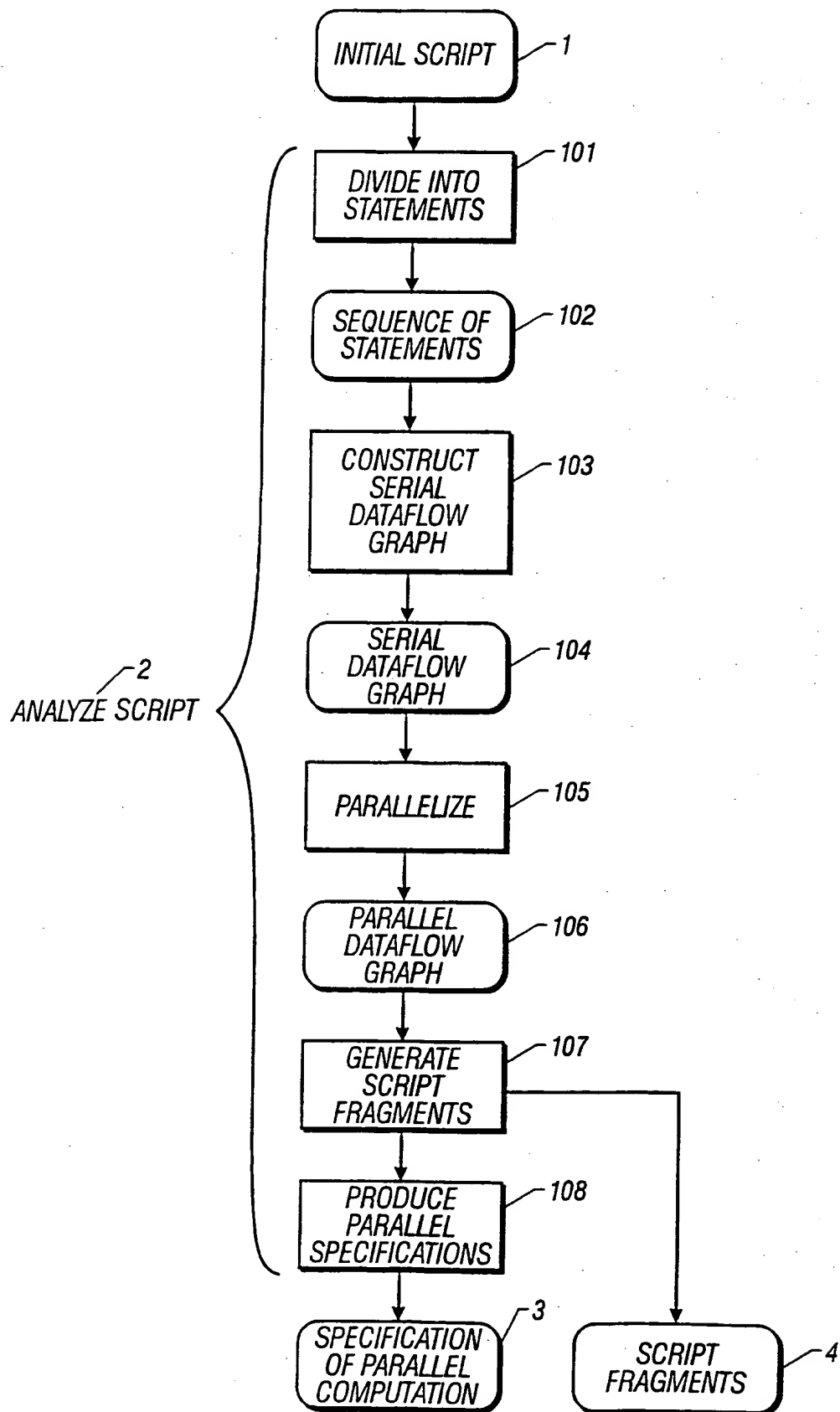


FIG. 2

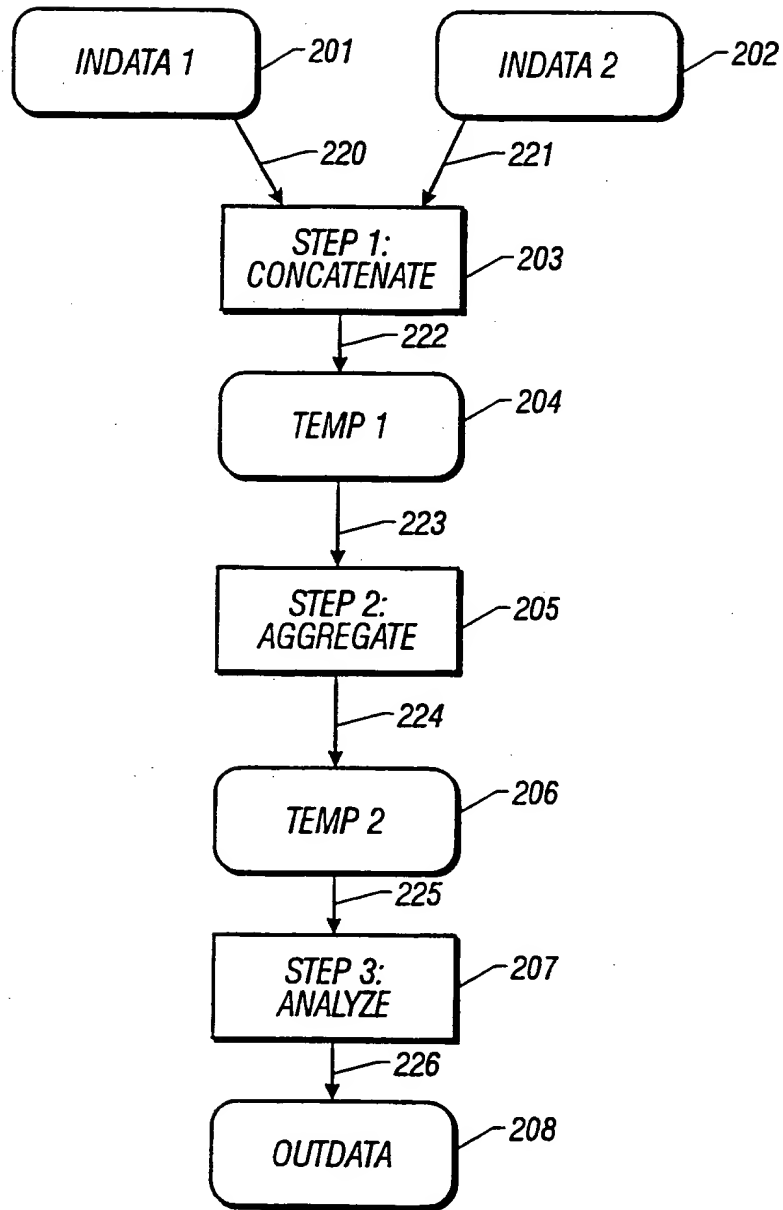


FIG. 3

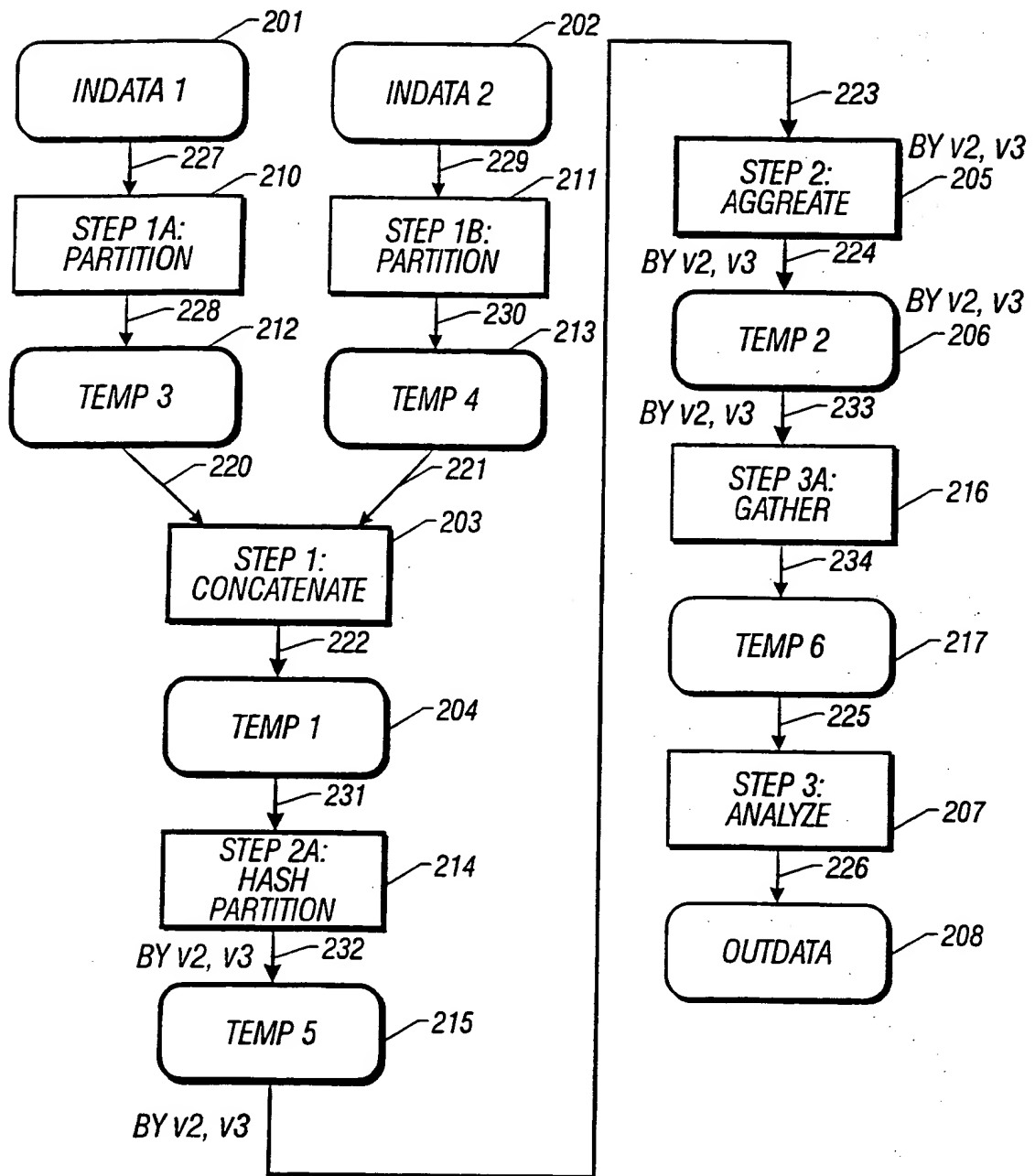


FIG. 4

```
INPUT INDATA1 INPUT1 .DAT  
INPUT INDATA2 INPUT2 .DAT  
CONCATENTATE INDATA1 INDATA2  
AGGREGATE o1 =MIN v1, o2 =MAX v1, o3 = SUM v1 BY v2, v3  
ANALYZE  
OUTPUT OUTDATA OUTPUT .DAT.
```

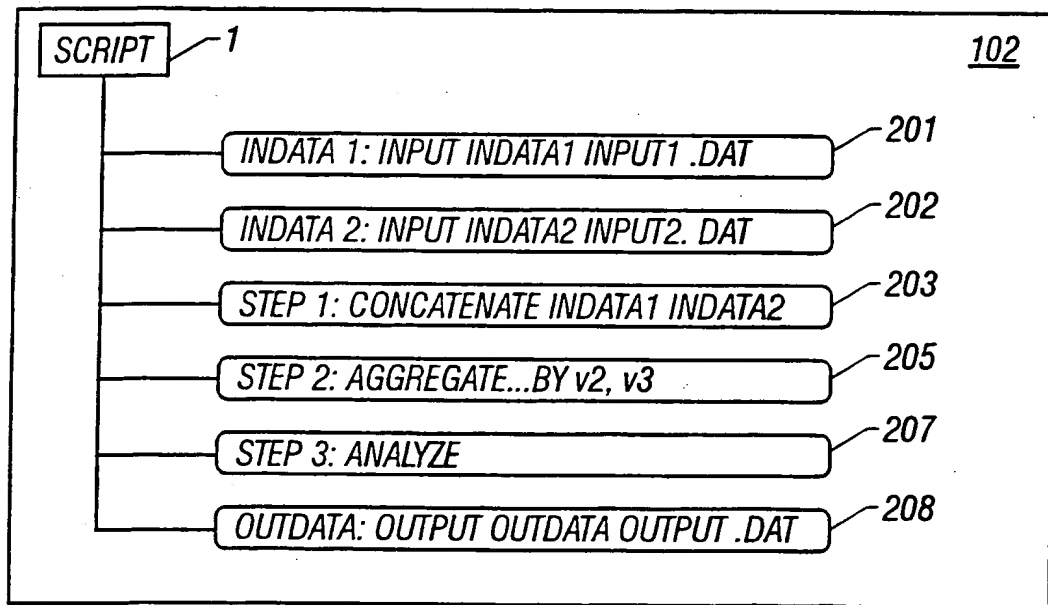


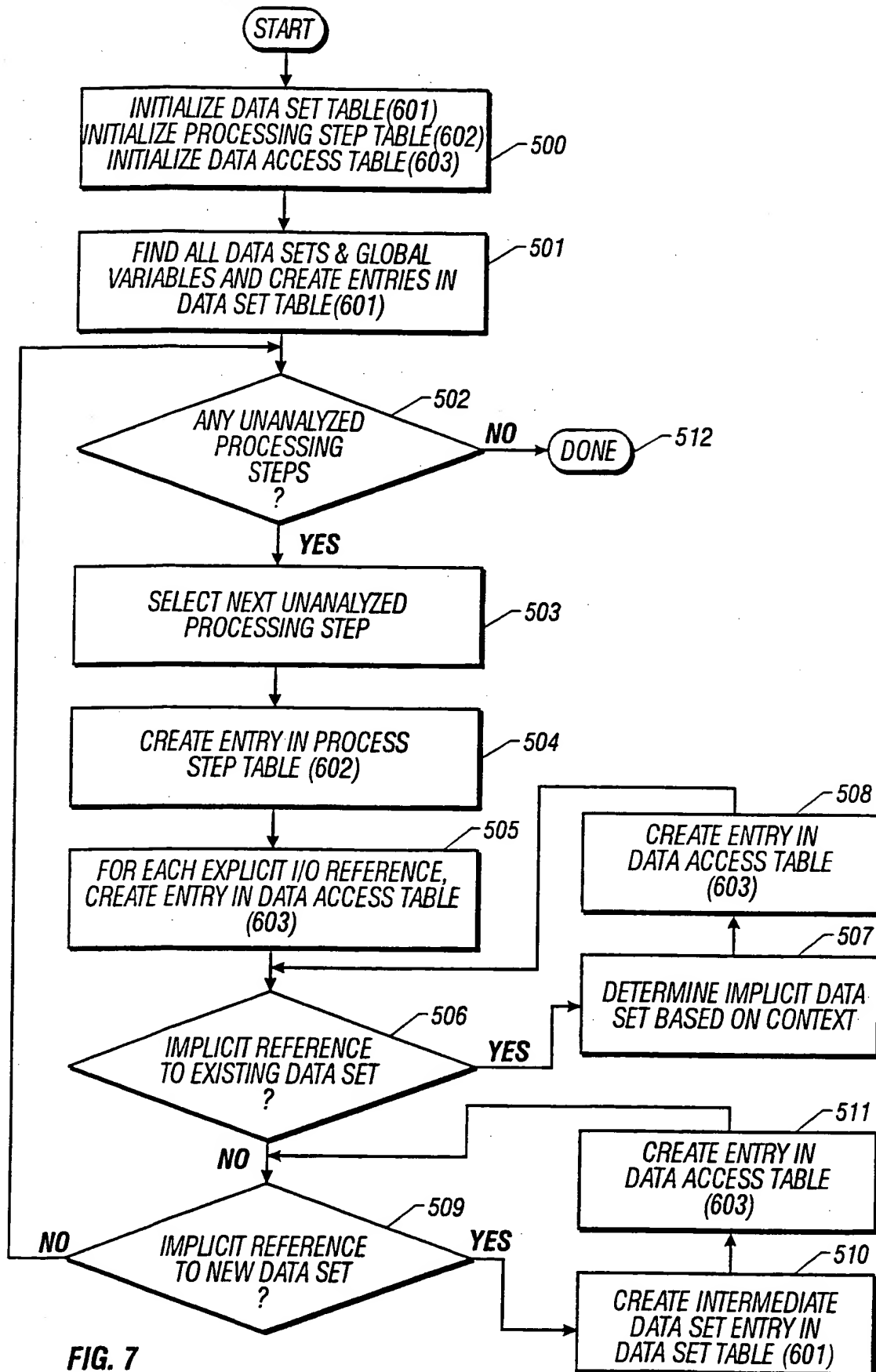
FIG. 5

201	NAME	CLASS	FILE	EXPLICIT?
202	INDATA1	INPUT	INPUT1.DAT	YES
208	INDATA2	INPUT	INPUT2.DAT	YES
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES
206	TEMP1	TEMP		NO
	TEMP2	TEMP		NO
DATA SET TABLE				<u>601</u>

203	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)
205	STEP1	CONCATENATE	
	STEP2	AGGREGATE	o1=MIN v1,o2=MAX v1,o3=AVGV1 BY v2,v3
207	STEP3	ANALYZE	
PROCESSING STEP TABLE			<u>602</u>

220	STEP	DATA SET	DIRECTION	ROLE
221	STEP1	INDATA1	INPUT	IN
222	STEP1	INDATA2	INPUT	IN
223	STEP1	TEMP1	OUTPUT	OUT
224	STEP2	TEMP1	INPUT	IN
225	STEP2	TEMP2	OUTPUT	OUT
226	STEP3	TEMP2	INPUT	IN
	STEP3	OUTDATA	OUTPUT	OUT
DATA SET ACCESS TABLE				<u>603</u>

FIG. 6



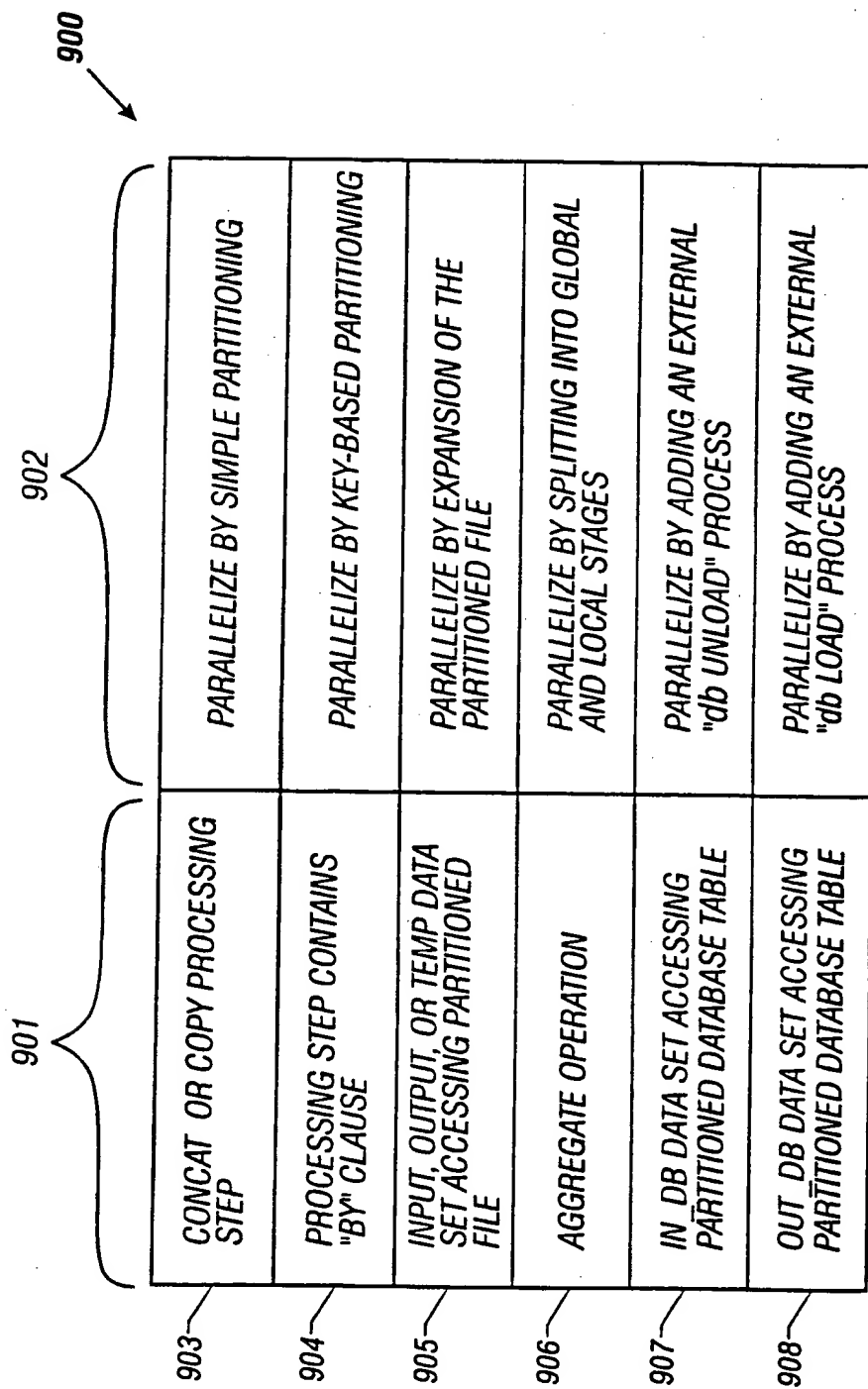


FIG. 8

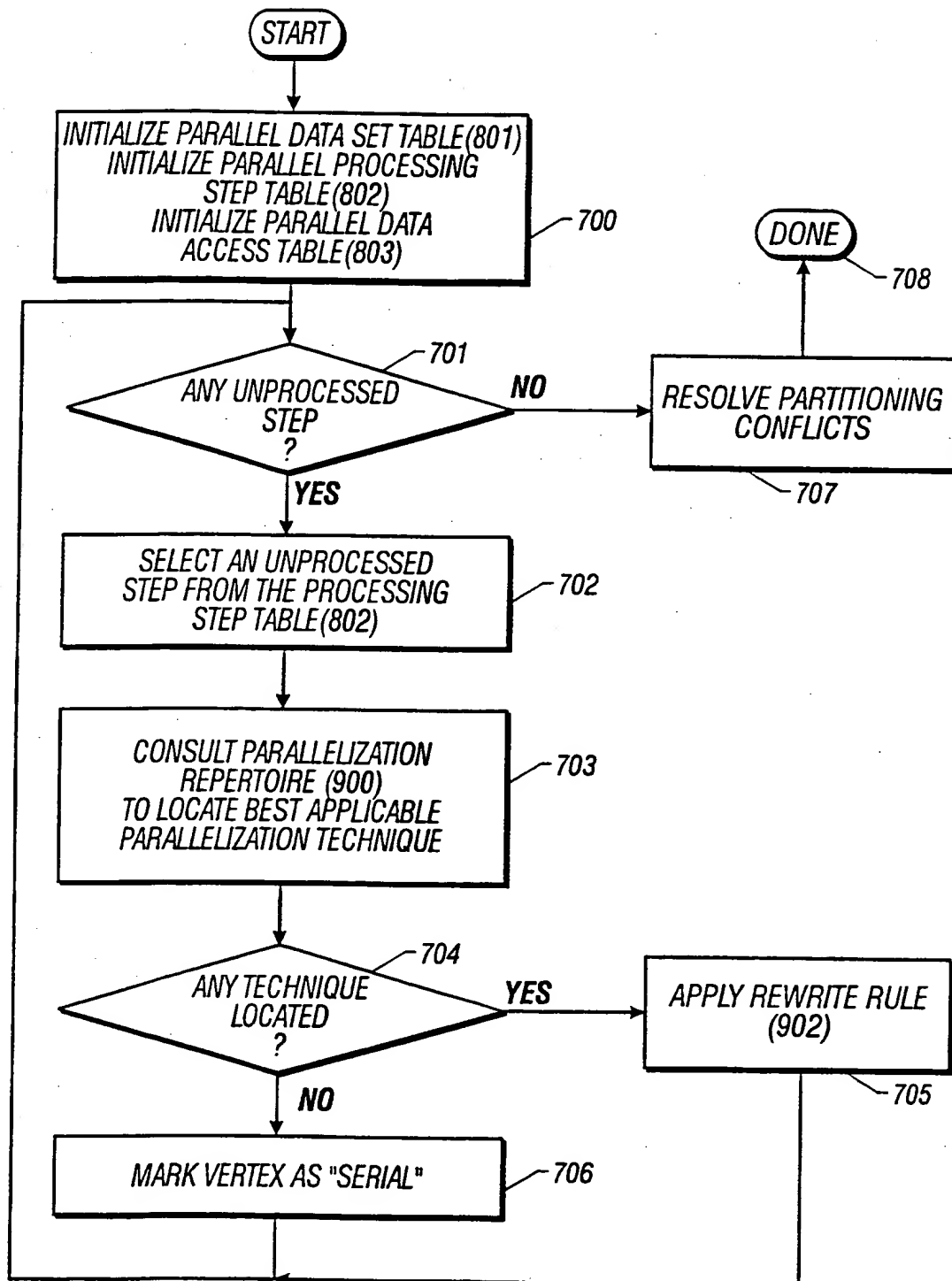


FIG. 9

201	NAME	CLASS	FILE	EXPLICIT?	PARTITIONING	801
202	INDATA1	INPUT	INPUT1.DAT	YES	SERIAL	
208	INDATA2	INPUT	INPUT2.DAT	YES	SERIAL	
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL	
206	TEMP1	TEMP		NO		
	TEMP2	TEMP		NO		
PARALLEL DATA SET TABLE (INITIAL)						
203	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)	PARTITIONING		802
205	STEP1	CONCATENATE				
	STEP2	AGGREGATE	O1=MIN V1,O2=MAX V1,O3=AVG V1 BY V2,V3			
207	STEP3	ANALYZE				
PARALLEL PROCESSING STEP TABLE (INITIAL)						
220	STEP	DATA SET	DIRECTION	ROLE	PARTITIONING	803
221	STEP1	INDATA1	INPUT	IN		
222	STEP1	INDATA2	INPUT	IN		
223	STEP1	TEMP1	OUTPUT	OUT		
224	STEP2	TEMP1	INPUT	IN		
225	STEP2	TEMP2	OUTPUT	OUT		
226	STEP3	TEMP2	INPUT	IN		
	STEP3	OUTDATA	OUTPUT	OUT		
PARALLEL DATA SET ACCESS TABLE (INITIAL)						

FIG. 10

201	NAME	CLASS	FILE	EXPLICIT?	PARTITIONING
202	INDATA1	INPUT	INPUT1.DAT	YES	SERIAL
208	INDATA2	INPUT	INPUT2.DAT	YES	SERIAL
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL
206	TEMP1	TEMP		NO	
	TEMP2	TEMP		NO	
PARALLEL DATA SET TABLE					
					801
203	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)	PARTITIONING	
205	STEP1	CONCATENATE		SIMPLE	
	STEP2	AGGREGATE	01 = MIN V1, 02 = MAX V1, 03 = AVGV1 BY V2, V3	BY V2, V3	
207	STEP3	ANALYZE		SERIAL	
PARALLEL PROCESSING STEP TABLE					
					802
220	STEP	DATA SET	DIRECTION	ROLE	PARTITIONING
221	STEP1	INDATA1	INPUT	IN	SIMPLE
222	STEP1	INDATA2	INPUT	IN	SIMPLE
223	STEP1	TEMP1	OUTPUT	OUT	SIMPLE
224	STEP2	TEMP1	INPUT	IN	BY V2, V3
225	STEP2	TEMP2	OUTPUT	OUT	BY V2, V3
226	STEP3	TEMP2	INPUT	IN	SERIAL
	STEP3	OUTDATA	OUTPUT	OUT	SERIAL
PARALLEL DATA SET ACCESS TABLE					
					803

FIG. 11

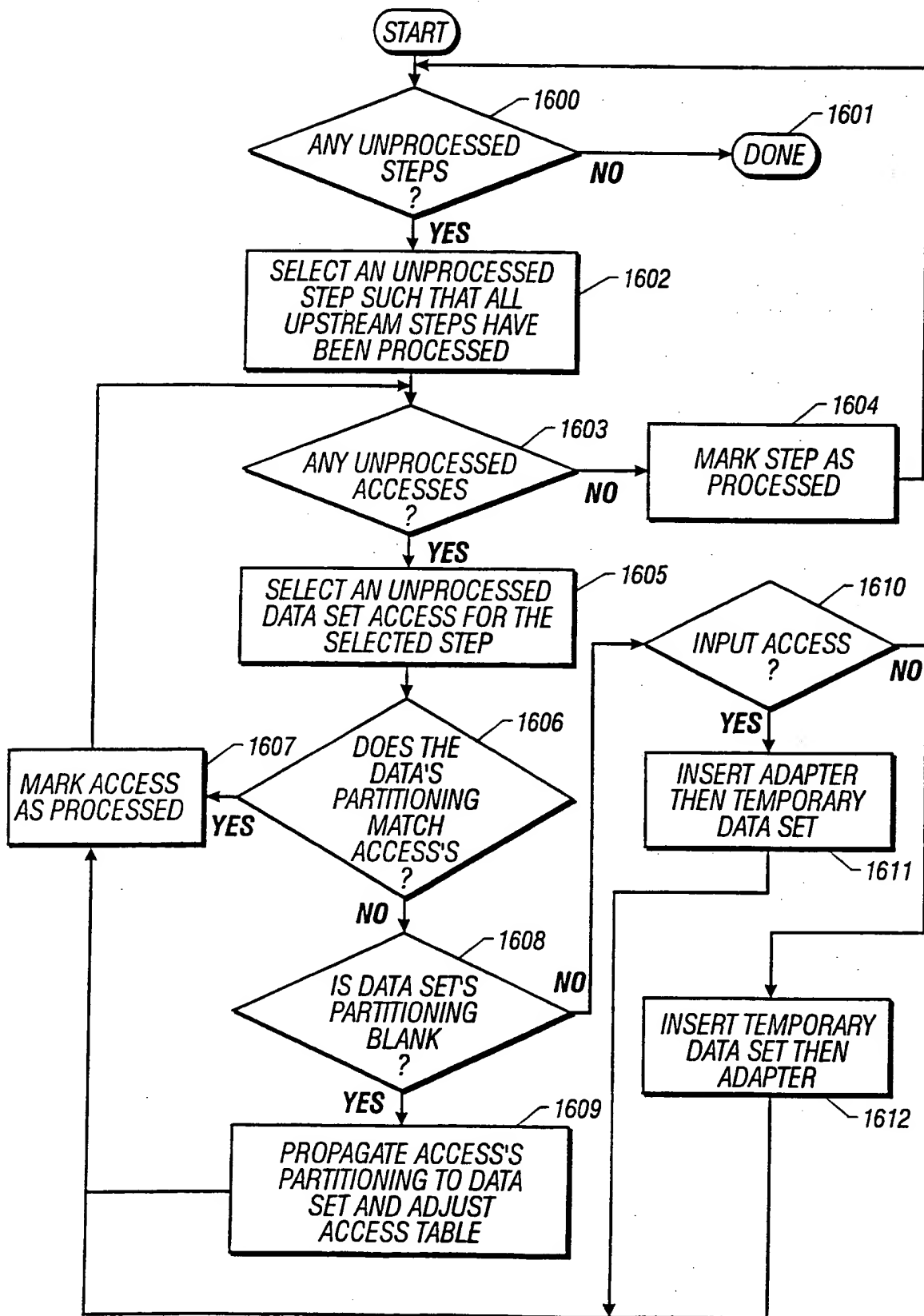


FIG. 12

PARALLEL DATA SET TABLE					801
NAME	CLASS	FILE	EXPLICIT?	PARTITIONING	
201—INDATA1	INPUT	INPUT1.DAT	YES	SERIAL	
202—INDATA2	INPUT	INPUT2.DAT	YES	SERIAL	
208—OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL	
204—TEMP1	TEMP		NO	SIMPLE	
206—TEMP2	TEMP		NO		
212—TEMP3	TEMP		NO	SIMPLE	
213—TEMP4	TEMP		NO	SIMPLE	
PARALLEL DATA SET ACCESS TABLE					802
NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)	PARTITIONING		
210—STEP1A	SIMPLE-PARTITION		SERIAL		
211—STEP2B	SIMPLE-PARTITION		SERIAL		
203—STEP1	CONCATENATE	O1=MIN V1,O2=MAX V1,O3=AVGV1	SIMPLE		
205—STEP2	AGGREGATE	BY V2,V3	BY V2, v3		
PARALLEL PROCESSING STEP TABLE					803
STEP	DATA SET	DIRECTION	ROLE	PARTITIONING	
227—STEP1A	INDATA1	INPUT	IN	SERIAL	
228—STEP1A	TEMP3	OUTPUT	OUT	SIMPLE	
229—STEP1B	INDATA2	INPUT	IN	SERIAL	
230—STEP1B	TEMP4	OUTPUT	OUT	SIMPLE	
220—STEP1	TEMP3	INPUT	IN	SIMPLE	
221—STEP1	TEMP4	INPUT	IN	SIMPLE	
222—STEP1	TEMP1	OUTPUT	OUT	SIMPLE	
223—STEP1	TEMP1	INPUT	IN	SIMPLE	
224—STEP2	TEMP2	OUTPUT	OUT	BY V2, v3	
225—STEP2	TEMP2	INPUT	IN	BY V2, v3	
226—STEP3	OUTDATA	OUTPUT	OUT	SERIAL	

FIG. 13

201	NAME	CLASS	FILE	EXPLICIT?	PARTITIONING	801
202	INDATA1	INPUT	INPUT1.DAT	YES	SERIAL	
208	INDATA2	INPUT	INPUT2.DAT	YES	SERIAL	
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL	
206	TEMP1	TEMP		NO	SIMPLE	
212	TEMP2	TEMP		NO	BY V2,V3	
213	TEMP3	TEMP		NO	SIMPLE	
215	TEMP4	TEMP		NO	SIMPLE	
	TEMP5	TEMP		NO	BY V2,V3	
PARALLEL DATA SET TABLE						801
210	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)	PARTITIONING		802
211	STEP1A	SIMPLE-PARTITION		SERIAL		
203	STEP1B	SIMPLE-PARTITION		SERIAL		
214	STEP1	CONCATENATE		SIMPLE		
205	STEP2A	HASH-PARTITION	BY V2,V3	SIMPLE		
	STEP2	AGGREGATE	O1=MIN V1, O2=MAX V1, O3=AVG V1	BY V2, v3		
207	STEP3	ANALYZE	BY V2,V3	SERIAL		
PARALLEL PROCESSING STEP TABLE						802
227	STEP	DATA SET	DIRECTION	ROLE	PARTITIONING	803
228	STEP1A	INDATA1	INPUT	IN	SERIAL	
229	STEP1A	TEMP3	OUTPUT	OUT	SIMPLE	
230	STEP1B	INDATA2	INPUT	IN	SERIAL	
220	STEP1B	TEMP4	OUTPUT	OUT	SIMPLE	
221	STEP1	TEMP3	INPUT	IN	SIMPLE	
222	STEP1	TEMP4	INPUT	IN	SIMPLE	
231	STEP1	TEMP1	OUTPUT	OUT	SIMPLE	
232	STEP2A	TEMP1	INPUT	IN	SIMPLE	
223	STEP2A	TEMP5	OUTPUT	OUT	BY V2,V3	
224	STEP2	TEMP5	INPUT	IN	BY V2, v3	
225	STEP2	TEMP2	OUTPUT	OUT	BY V2, v3	
226	STEP3	TEMP2	INPUT	IN	SERIAL	
	OUTDATA	OUTPUT	OUT	SERIAL		
PARALLEL DATA SET ACCESS TABLE						803

FIG. 14

201	NAME	CLASS	FILE	EXPLICIT?	PARTITIONING	801	
202	INDATA1	INPUT	INPUT1.DAT	YES	SERIAL		
208	INDATA2	INPUT	INPUT2.DAT	YES	SERIAL		
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL		
206	TEMP1	TEMP		NO	SIMPLE		
212	TEMP2	TEMP		NO	BY v2, v3		
213	TEMP3	TEMP		NO	SIMPLE		
215	TEMP4	TEMP		NO	SIMPLE		
217	TEMP5	TEMP		NO	BY v2, v3		
	TEMP6	TEMP		NO	SERIAL		
PARALLEL DATA SET TABLE							
210	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)		PARTITIONING	802	
211	STEP1A	SIMPLE-PARTITION			SERIAL		
203	STEP1B	SIMPLE-PARTITION			SERIAL		
214	STEP1	CONCATENATE			SIMPLE		
205	STEP2A	HASH-PARTITION			SIMPLE		
	STEP2	AGGREGATE	BY v2,v3 o1=MIN v1, o2=MAX v1, o3=AVG v1		BY v2, v3		
216	STEP3A	GATHER			SERIAL		
207	STEP3	ANALYZE			SERIAL		
PARALLEL PROCESSING STEP TABLE							
227	STEP	DATA SET	DIRECTION	ROLE	PARTITIONING	803	
228	STEP1A	INDATA1	INPUT	IN	SERIAL		
229	STEP1A	TEMP3	OUTPUT	OUT	SIMPLE		
230	STEP1B	INDATA2	INPUT	IN	SERIAL		
220	STEP1B	TEMP4	OUTPUT	OUT	SIMPLE		
221	STEP1	TEMP3	INPUT	IN	SIMPLE		
222	STEP1	TEMP4	INPUT	IN	SIMPLE		
231	STEP1	TEMP1	OUTPUT	OUT	SIMPLE		
232	STEP2A	TEMP1	INPUT	IN	SIMPLE		
223	STEP2A	TEMP5	OUTPUT	OUT	SIMPLE		
224	STEP2	TEMP5	INPUT	IN	SIMPLE		
233	STEP2	TEMP2	OUTPUT	OUT	BY v2,v3		
234	STEP3A	TEMP2	INPUT	IN	BY v2,v3		
225	STEP3A	TEMP6	OUTPUT	OUT	BY v2,v3		
226	STEP3	TEMP6	INPUT	IN	SERIAL		
	STEP3	OUTDATA	OUTPUT	OUT	SERIAL		
PARALLEL DATA SET ACCESS TABLE							

FIG. 15

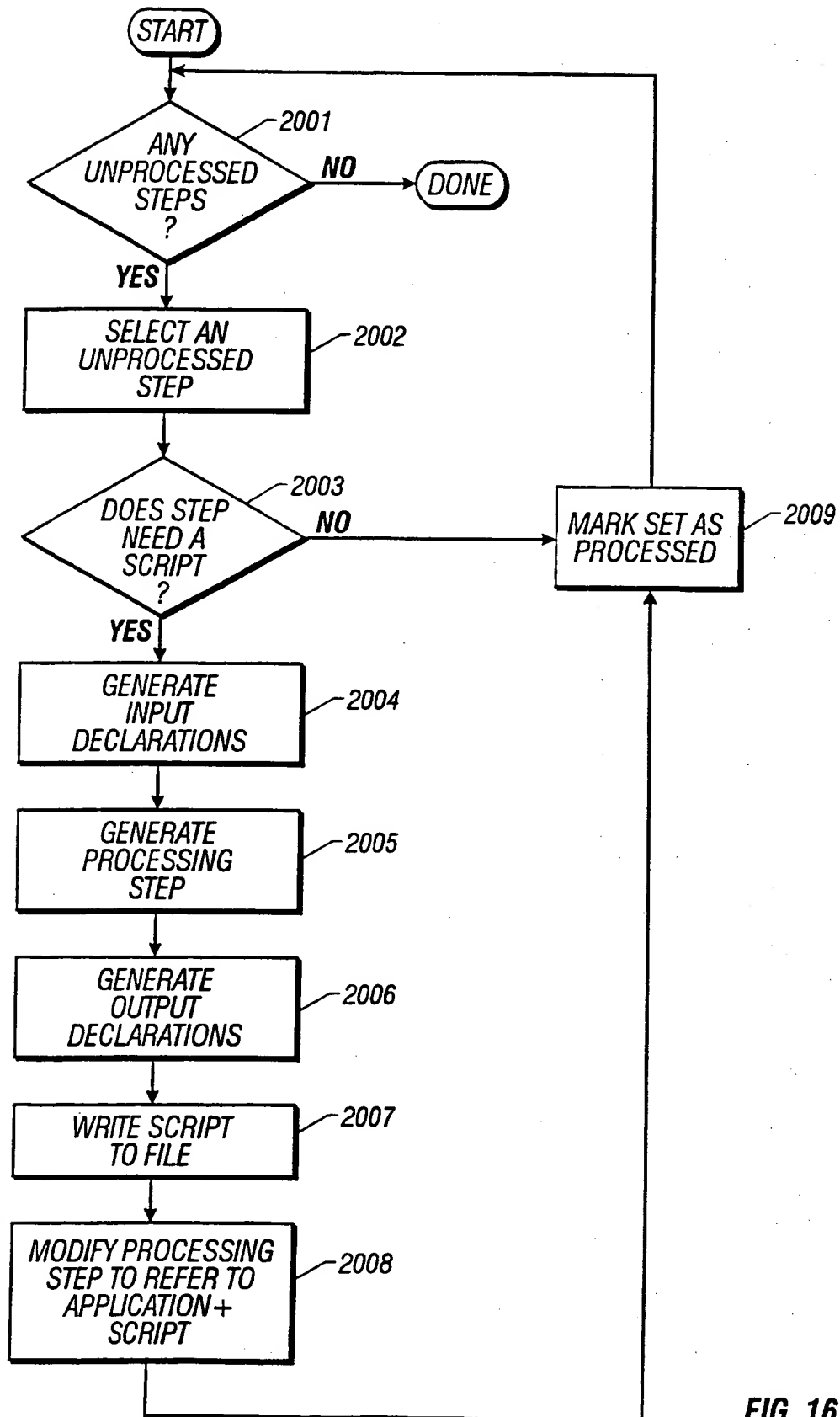


FIG. 16

SCRIPT 1:

INPUT INDATA1 \$1
INPUT INDATA2 \$2
CONCATENATE indata1 indata2
OUTPUT outdata \$3

2101

SCRIPT 2:

INPUT indata 1 \$1
AGGREGATE o1=min v1, o2=max v2, o3=avg v1 BY v2,v3
OUTPUT outdata \$2

2102

SCRIPT 3:

INPUT indata \$1
ANALYZE
OUTPUT outdata \$2

2103

4

FIG. 17

201	NAME	CLASS	FILE	EXPLICIT?	PARTITIONING	801
202	INDATA1	INPUT	INPUT1.DAT	YES	SERIAL	
208	INDATA2	INPUT	INPUT2.DAT	YES	SERIAL	
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL	
206	TEMP1	TEMP		NO	SIMPLE	
212	TEMP2	TEMP		NO	BY v2, v3	
213	TEMP3	TEMP		NO	SIMPLE	
215	TEMP4	TEMP		NO	SIMPLE	
217	TEMP5	TEMP		NO	BY v2, v3	
	TEMP6	TEMP		NO	SERIAL	
PARALLEL DATA SET TABLE						
210	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)		PARTITIONING	802
211	STEP1A	SIMPLE-PARTITION			SERIAL	
203	STEP1B	SIMPLE-PARTITION			SERIAL	
214	STEP1	RUN ANALYZE	SCRIPT1		SIMPLE	
205	STEP2A	HASH-PARTITION	BY v2, v3		SIMPLE	
216	STEP2	RUN ANALYZE	SCRIPT2		BY v2, v3	
207	STEP3A	GATHER			SERIAL	
	STEP3	RUN ANALYZE	SCRIPT3		SERIAL	
PARALLEL PROCESSING STEP TABLE						
227	STEP	DATA SET	DIRECTION	ROLE	PARTITIONING	803
228	STEP1A	INDATA1	INPUT	IN	SERIAL	
229	STEP1A	TEMP3	OUTPUT	OUT	SIMPLE	
230	STEP1B	INDATA2	INPUT	IN	SERIAL	
220	STEP1B	TEMP4	OUTPUT	OUT	SIMPLE	
221	STEP1	TEMP3	INPUT	IN	SIMPLE	
222	STEP1	TEMP4	INPUT	IN	SIMPLE	
231	STEP1	TEMP1	OUTPUT	OUT	SIMPLE	
232	STEP2A	TEMP1	INPUT	IN	SIMPLE	
233	STEP2A	TEMP5	OUTPUT	OUT	BY v2, v3	
223	STEP2	TEMP5	INPUT	IN	BY v2, v3	
224	STEP2	TEMP2	OUTPUT	OUT	BY v2, v3	
233	STEP2	TEMP2	INPUT	IN	BY v2, v3	
234	STEP3A	TEMP6	OUTPUT	OUT	SERIAL	
225	STEP3A	TEMP6	INPUT	IN	SERIAL	
226	STEP3	OUTDATA	OUTPUT	OUT	SERIAL	
PARALLEL DATA SET ACCESS TABLE						

FIG. 18

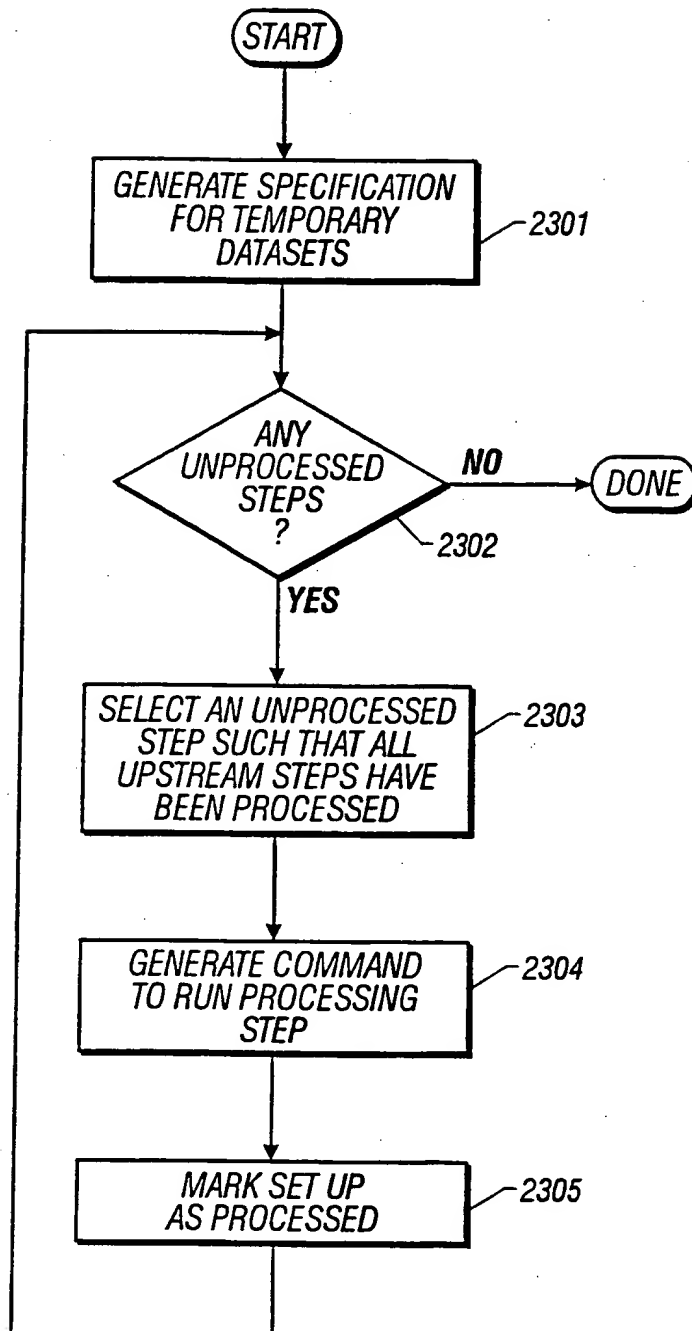


FIG. 19

201	NAME	CLASS	FILE	EXPLICIT?	PARTITIONING	801
202	INDATA1	INPUT	INPUT1.DAT	YES	SERIAL	
208	INDATA2	INPUT	INPUT2.DAT	YES	SERIAL	
204	OUTDATA	OUTPUT	OUTPUT.DAT	YES	SERIAL	
206	TEMP1	TEMP	TEMP1.1;TEMP1.2	NO	SIMPLE	
212	TEMP2	TEMP	TEMP2.1;TEMP2.2	NO	BY v2,v3	
213	TEMP3	TEMP	TEMP3.1;TEMP3.2	NO	SIMPLE	
215	TEMP4	TEMP	TEMP4.1;TEMP4.2	NO	SIMPLE	
217	TEMP5	TEMP	TEMP5.1;TEMP5.2	NO	BY v2,v3	
	TEMP6	TEMP	TEMP6	NO	SERIAL	
PARALLEL DATA SET TABLE						
210	NAME	OPERATION	PARAMETERS (EXCEPTING DATA SETS)		PARTITIONING	802
211	STEP1A	SIMPLE-PARTITION			SERIAL	
203	STEP1B	SIMPLE-PARTITION			SERIAL	
214	STEP1	RUN ANALYZE	SCRIPT1		SIMPLE	
205	STEP2A	HASH-PARTITION	BY v2,v3		SIMPLE	
216	STEP2	RUN ANALYZE	SCRIPT2		BY v2, v3	
217	STEP3A	GATHER			SERIAL	
207	STEP3	RUN ANALYZE	SCRIPT3		SERIAL	
PARALLEL PROCESSING STEP TABLE						
227	STEP	DATA SET	DIRECTION	ROLE	PARTITIONING	803
228	STEP1A	INDATA1	INPUT	IN	SERIAL	
229	STEP1A	TEMP3	OUTPUT	OUT	SIMPLE	
230	STEP1B	INDATA2	INPUT	IN	SERIAL	
220	STEP1B	TEMP4	OUTPUT	OUT	SIMPLE	
221	STEP1	TEMP3	INPUT	IN	SIMPLE	
222	STEP1	TEMP4	INPUT	IN	SIMPLE	
231	STEP1	TEMP1	OUTPUT	OUT	SIMPLE	
232	STEP2A	TEMP1	INPUT	IN	SIMPLE	
223	STEP2A	TEMP5	OUTPUT	OUT	SIMPLE	
224	STEP2	TEMP5	INPUT	IN	BY v2,v3	
233	STEP2	TEMP2	OUTPUT	OUT	BY v2,v3	
234	STEP3A	TEMP2	INPUT	IN	BY v2,v3	
225	STEP3A	TEMP6	OUTPUT	OUT	BY v2,v3	
226	STEP3	TEMP6	INPUT	IN	SERIAL	
		OUTDATA	OUTPUT	OUT	SERIAL	
PARALLEL DATA SET ACCESS TABLE						

FIG. 20

SIMPLE-PARTITION			
SIMPLE-PARTITION			
RUN ANALYZE	SCRIPT1	INPUT1.DAT	TEMP3.1;TEMP 3.2
HASH-PARTITION	V1,V2	INPUT2.DAT	TEMP4.1;TEMP 4.2
RUN ANALYZE	SCRIPT2	TEMP3.1;TEMP 3.2	TEMP4.1;TEMP 4.2
GATHER		TEMP1.1;TEMP 1.2	TEMP5.1;TEMP 5.2
RUN ANALYZE	SCRIPT3	TEMP5.1;TEMP 5.2	TEMP2.1;TEMP 2.2
		TEMP2.1;TEMP 2.2	TEMP6
		TEMP6	OUTPUT.DAT

FIG. 21

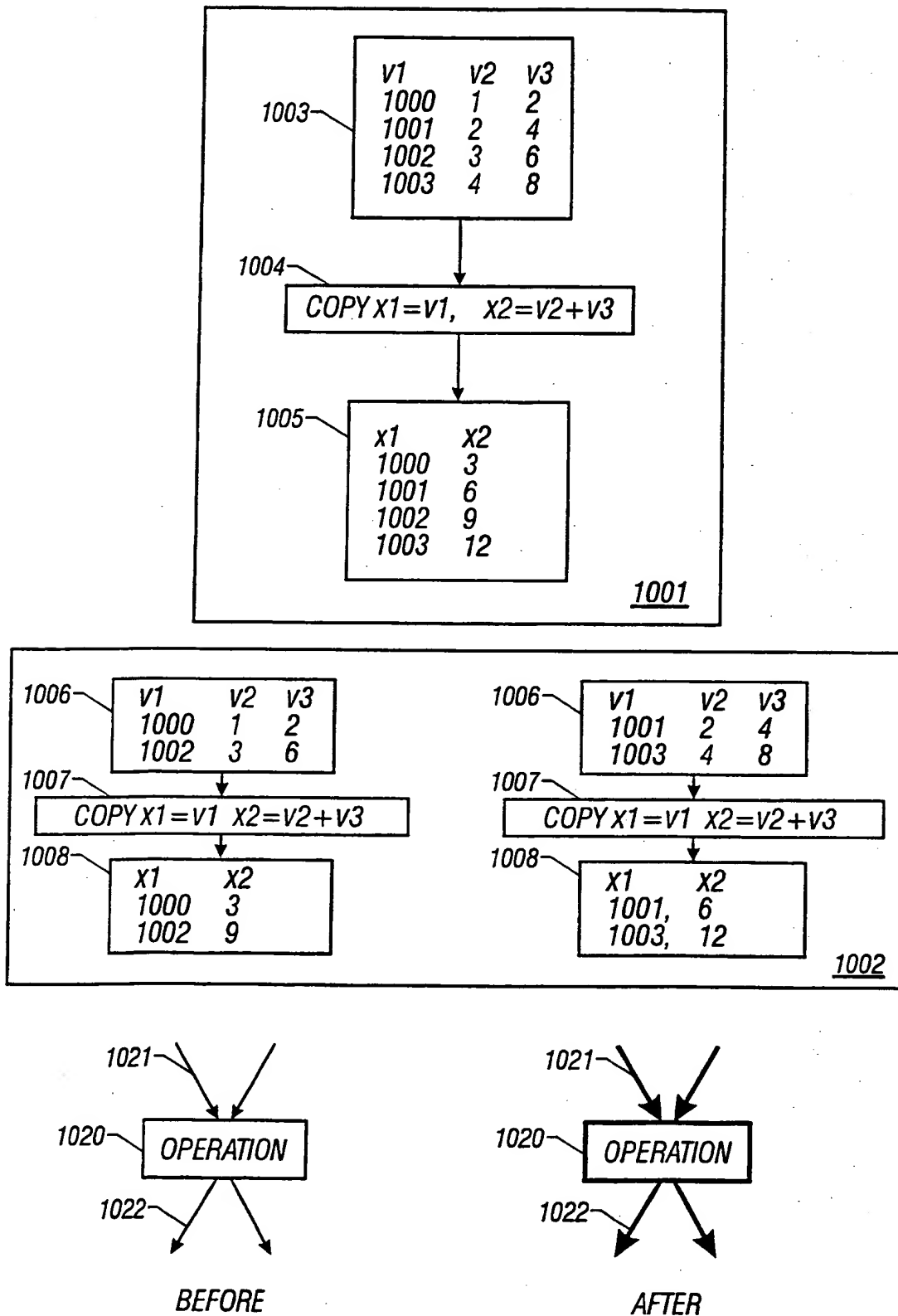


FIG. 22

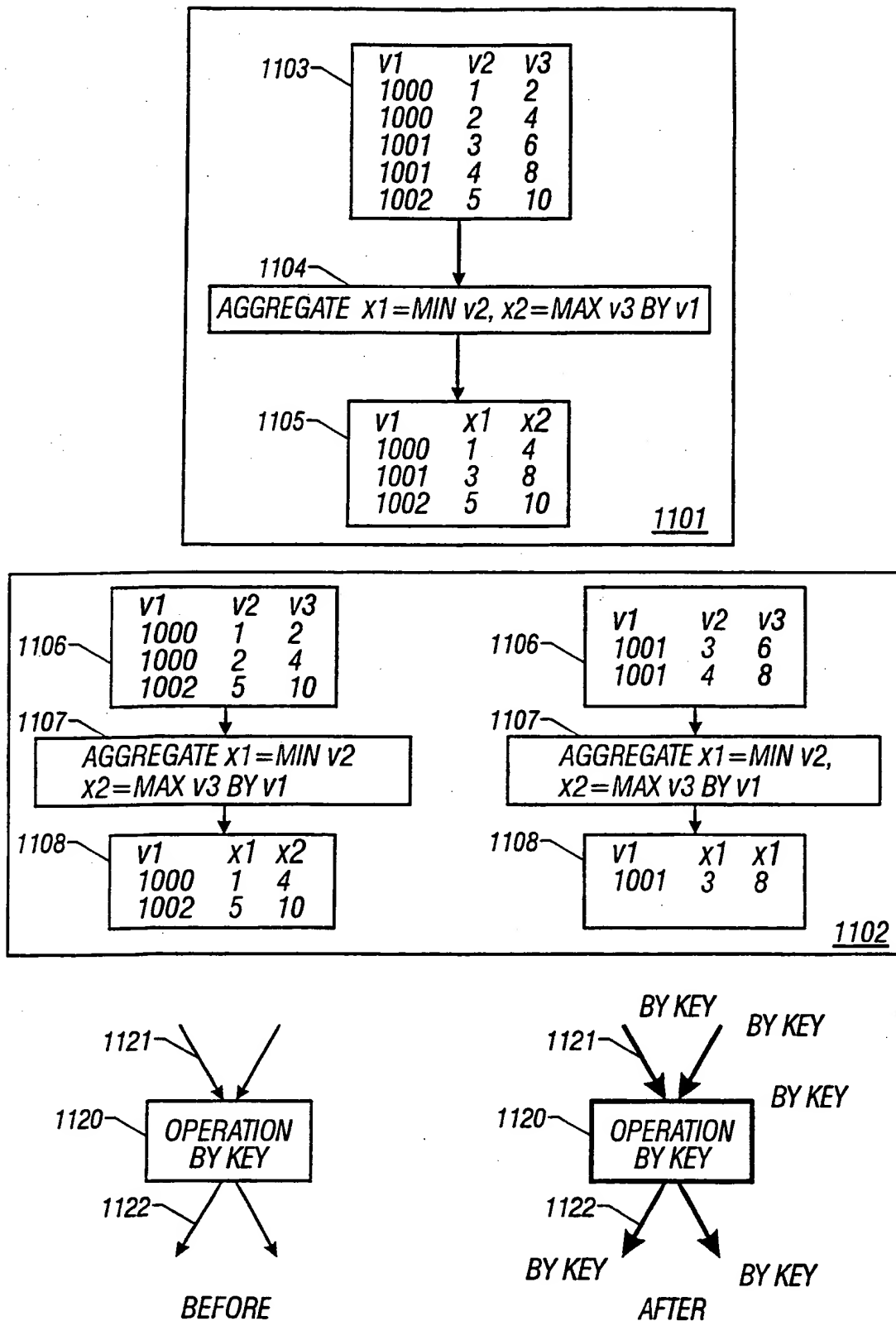


FIG. 23

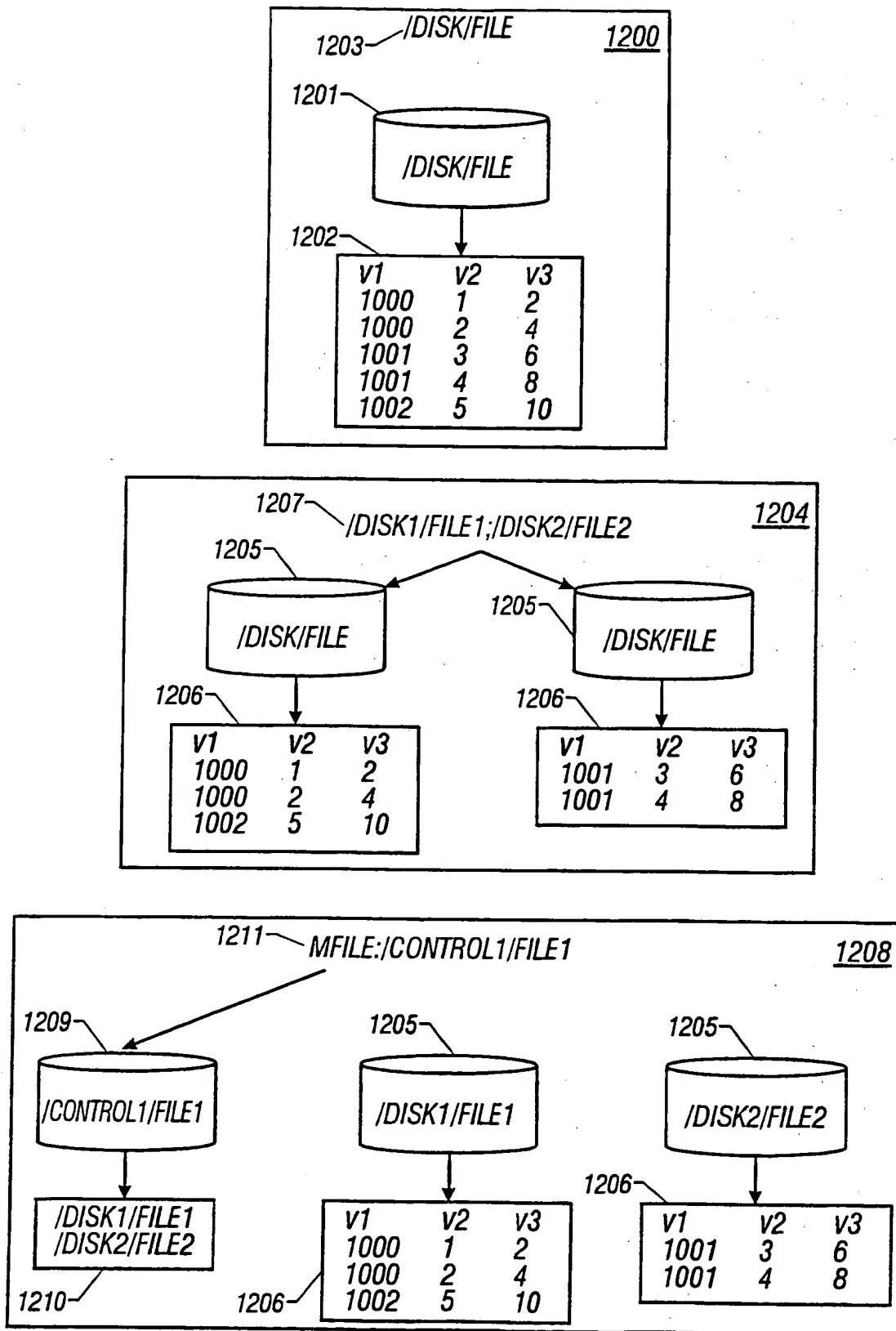


FIG. 24

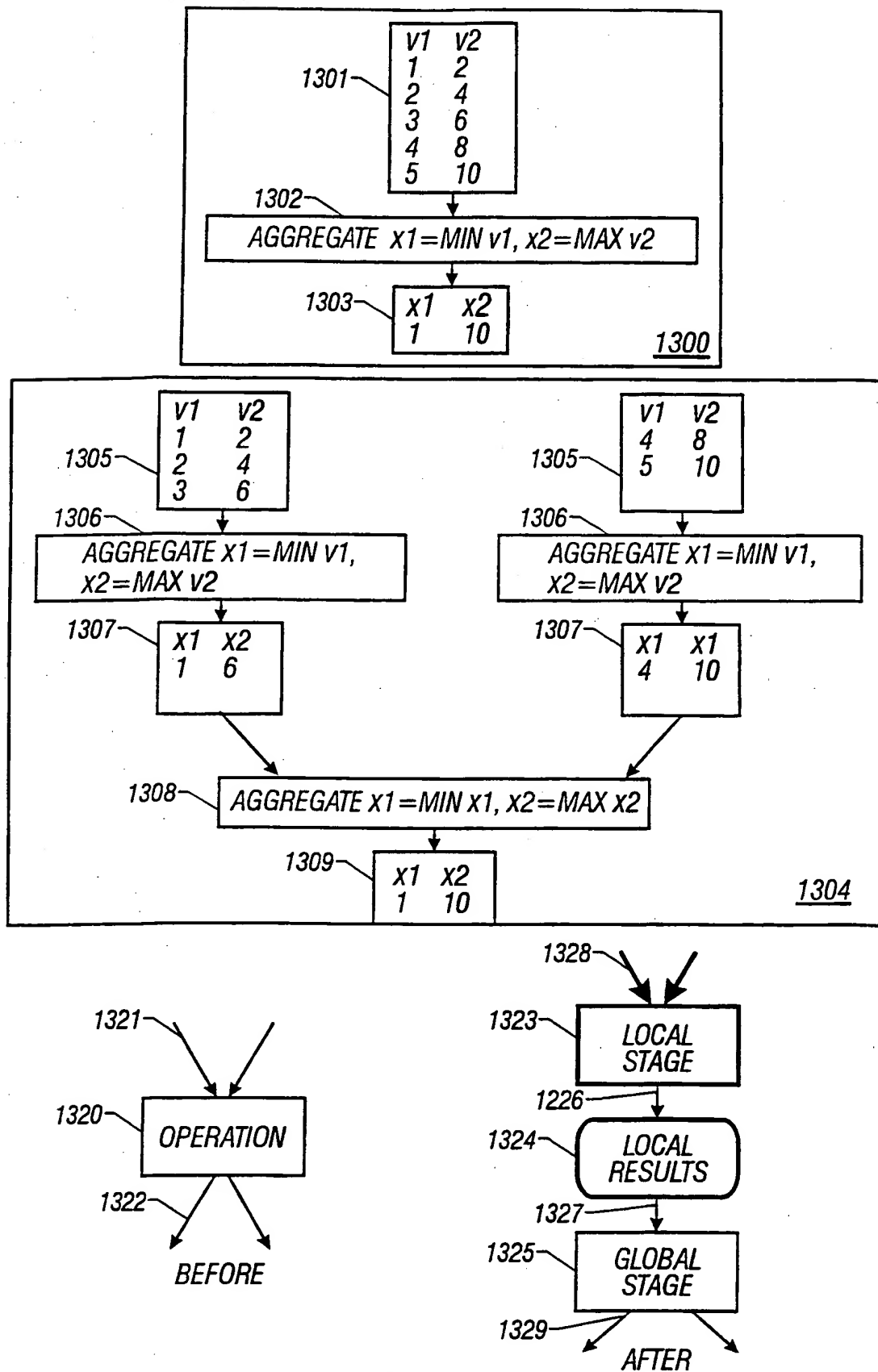


FIG. 25

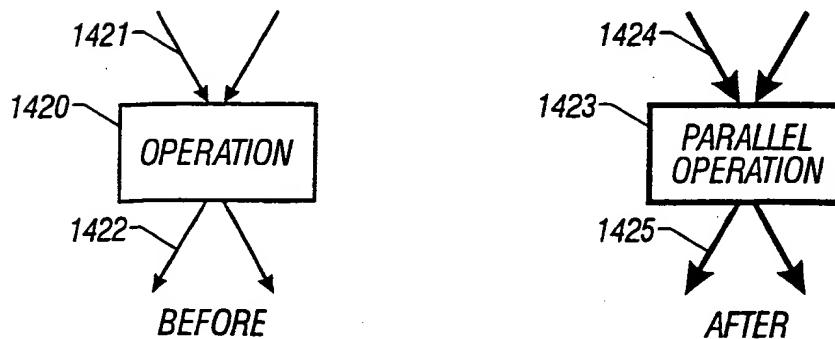
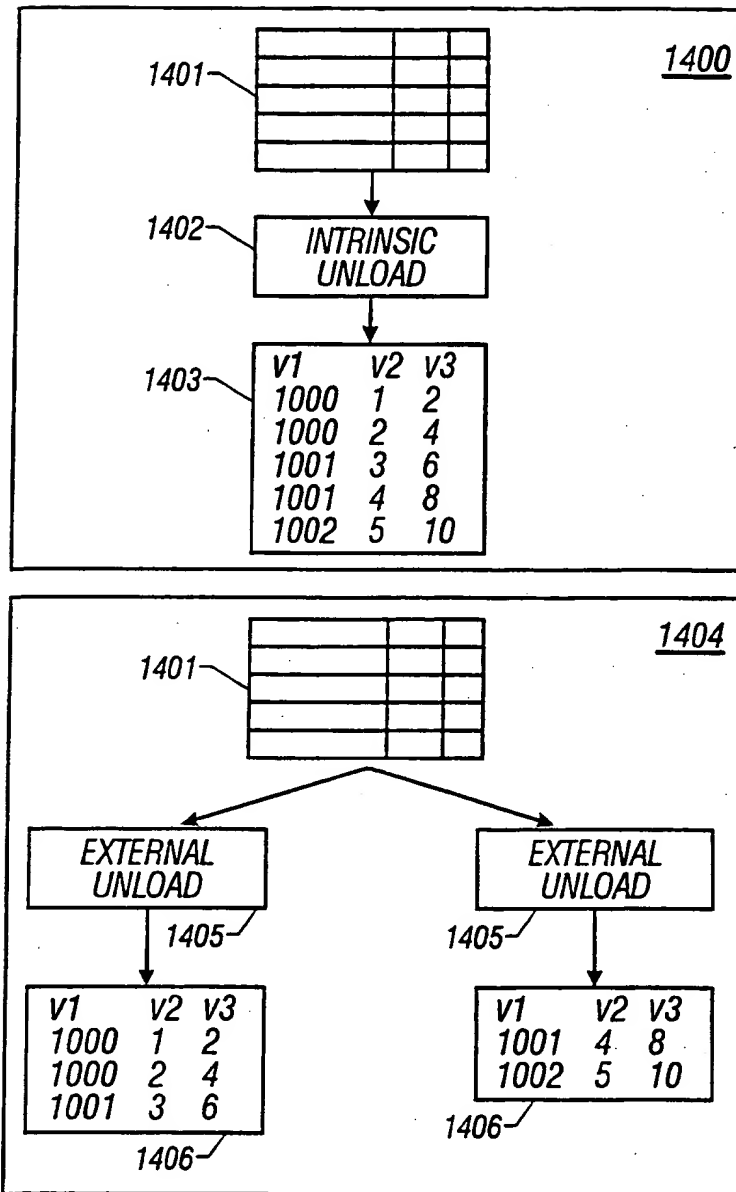


FIG. 26

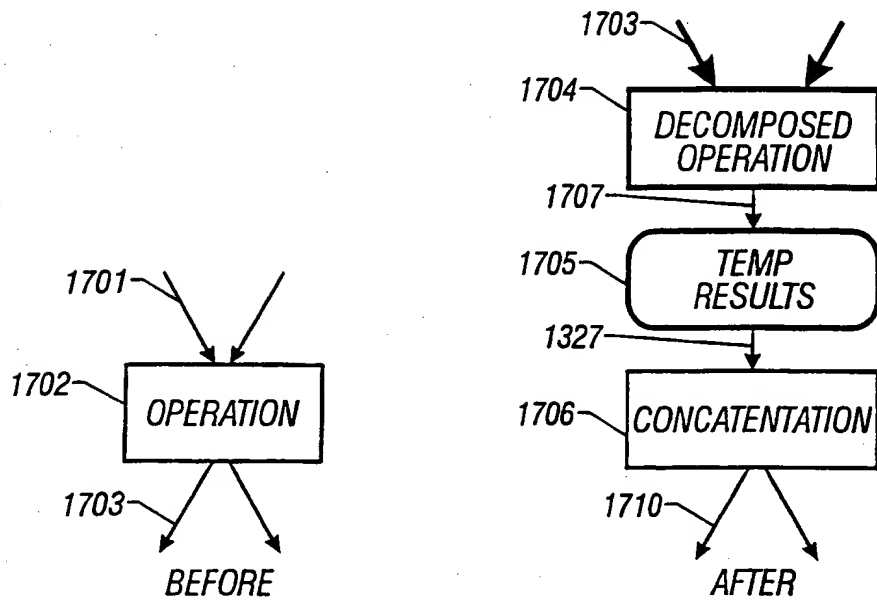


FIG. 27

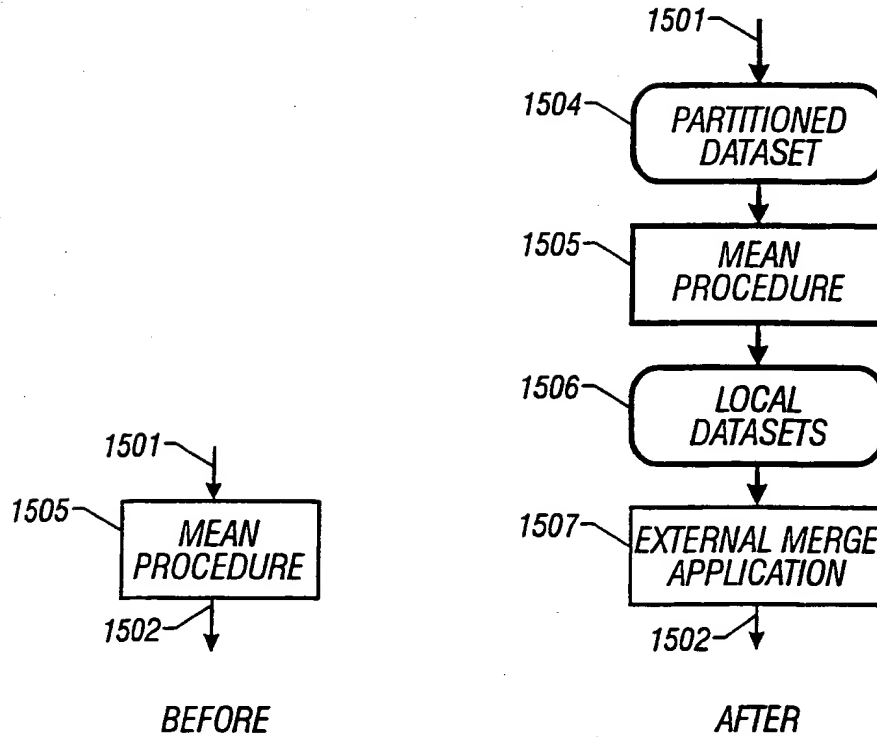


FIG. 28

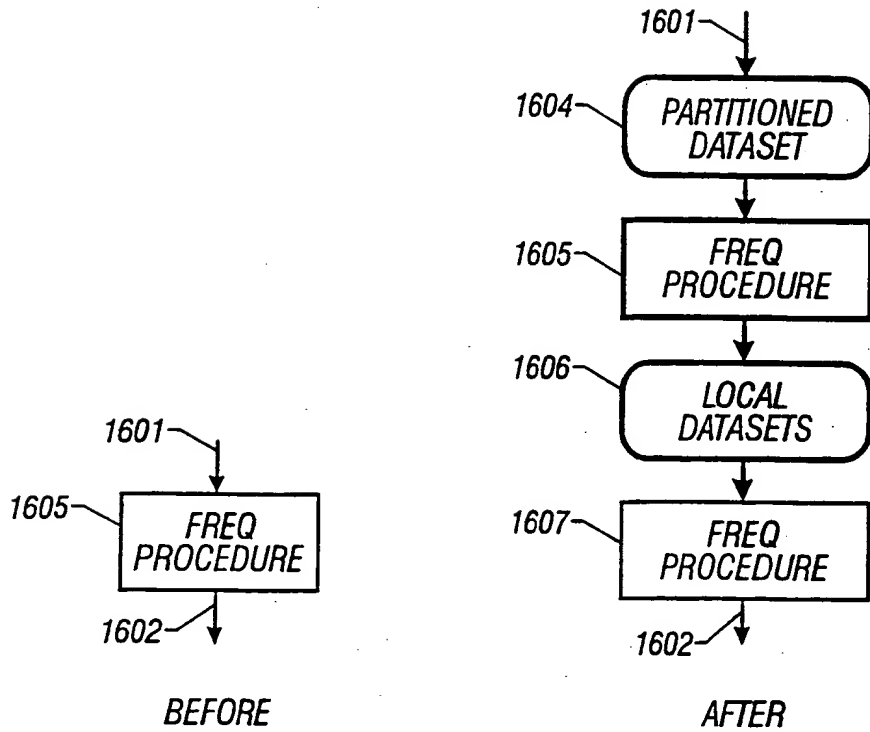


FIG. 29

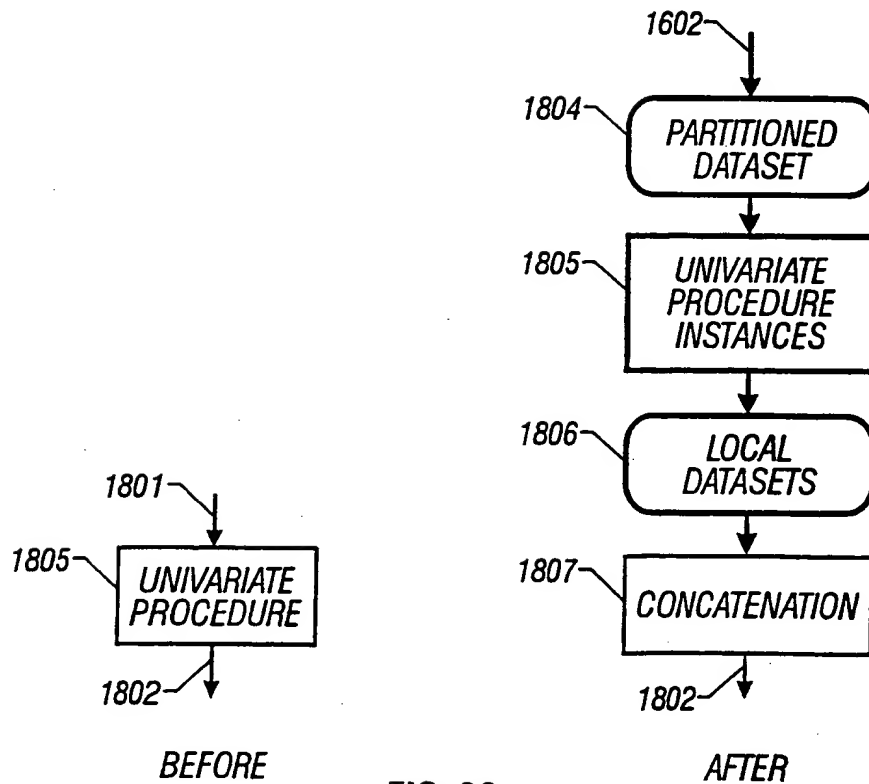


FIG. 30